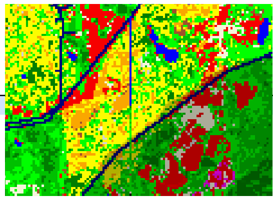

mLEAM

Fort Benning, Georgia/Alabama
An initial application of mLEAM is being conducted in the Fort Benning/Columbus, GA region, a multi-county region centered on a critical military reservation in the Southeast. Development patterns threaten to envelope portions of the installation, with the possibility of impacting training activities on the base.

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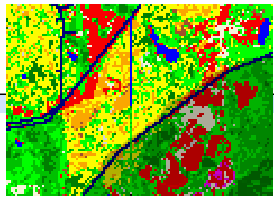
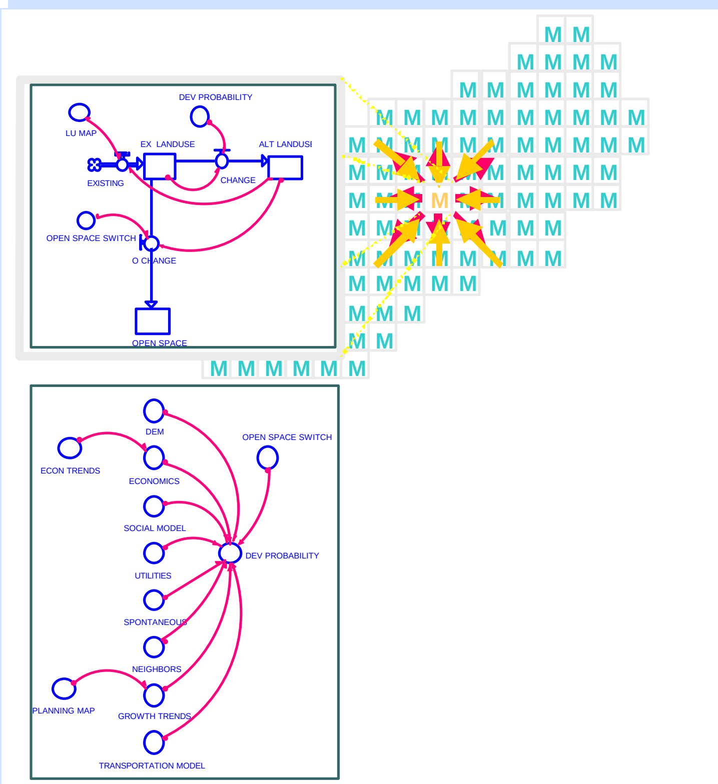


mLEAM

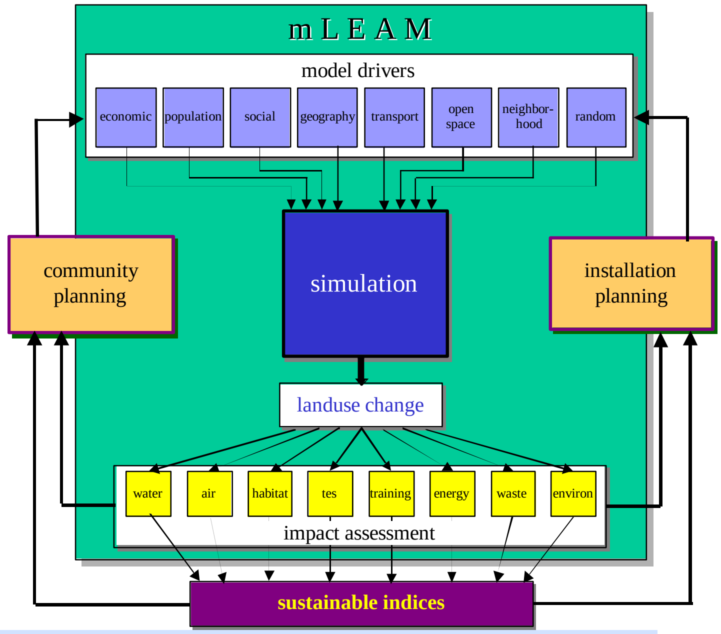
Approach

The military Land use Evolution and impact Assessment Model (mLEAM) represents an innovative approach to simulating the evolution of urban systems in a spatial and dynamic visual decision support tool. Based on the Land use Evolution and impact Assessment Model (LEAM) developed at the University of Illinois, mLEAM uses a Cellular Automata (CA) approach tightly coupled with an open architecture to develop land-use transformation simulations that are targeted toward military specific applications. The simulations are then evaluated for their probable environmental, economic, and social impacts so that "what-if" scenarios can be played out in real time across multiple stakeholder groups.

mLEAM converts an existing land use of a 30x30 meter cell based upon local area dynamics, the influence of neighboring cells, and the interaction of the driver sub-models.



calculating the probabilities of development in sub-model drivers



The mLEAM spatial modeling environment — which includes model drivers and impact sub-models.

Model Drivers

The fundamental mLEAM approach to capturing land use transformation dynamics begins with model drivers. Model drivers represent those forces (typically human) that contribute to urban land-use transformation decisions. Each driver is developed as a contextual sub-model run simultaneously in each grid cell of raster-based GIS map(s) linked to form the main framework of the model and produce landscape simulation scenarios. Sub-models are completed and run independently so that variables can be scaled and plotted in formats that help visualize and calibrate sub-model behavior before it becomes integrated into the larger model.

Model drivers represent the dynamic interactions between urbanized systems and the surrounding landscape. Scenario maps visually represent the resulting land use changes. Altering input parameters (e.g., policies) changes the spatial outcome of the scenario being studied. This enables what-if planning scenarios that can be visually examined and interpreted for each simulation exercise.